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*About Face*

# China Stumbles In Attempt to Cut Use of Coal and Oil


**Beijing Pushed Natural Gas,  
Which Is Now Too Costly;  
New Strain on Crude Prices**

**Tongchuan's 'Blue Days' at Risk**

**By SHAI OSTER and PATRICK BARTA**

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TONGCHUAN, China – China's decade-long attempt to push natural gas instead of coal and oil is faltering amid soaring gas prices. The country's struggle to diversify its energy use could further damage its already degraded environment and put renewed pressure on international oil prices.

Tongchuan, a city of 800,000 in central China, built a natural-gas distribution system in the late 1990s to combat its reliance on coal and battle smog created by its local cement factories. The pollution was so bad that Tongchuan couldn't be seen on satellite images, prompting China's then-leader to dub it "the invisible city."

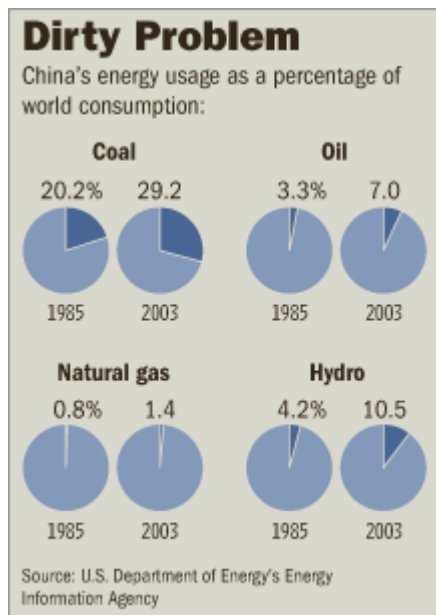
Despite a significant improvement in Tongchuan's air quality, local leaders are planning a new plant and it is going to be powered by coal. They blame sharply rising gas prices. "We have plenty of coal, why don't we use it?" says Zhao Guanlong, the deputy director of the city's development and planning commission.

China has backed out of at least one multibillion-dollar deal to buy gas from overseas oil companies and other deals are in jeopardy. Plans to build more than a dozen terminals to receive gas shipments in liquid form are on hold. Chinese officials are discouraging new gas-related investments because they fear the terminals won't be fully utilized.

Meanwhile, in the 18 months through July 2005, the government approved 168 power plants, nearly all of which are coal-fired. In the past year, China has built enough coal-fired power plants to provide electricity to all of Italy, all but ensuring coal will remain a dominant fuel for decades.

If China's gas push had been more successful, it would have reduced the strain China places on world oil markets. China is currently the world's second-largest consumer of energy, after the U.S., and its needs are growing as the economy expands.

In 2004, Chinese oil imports surged 15% after electricity supplies ran low, a move that caught energy markets by surprise and helped spur the biggest jump in oil prices in a generation to more than \$55 a barrel. With a more diverse energy portfolio that included natural gas, China wouldn't have needed to rely so heavily on oil. The current international price of more than \$63 a barrel is in part due to Chinese demand.



Today, only 2.1% of China's power plants run on natural gas, up from nearly nothing a few years ago. All things considered, gas can be a more expensive alternative than coal and oil, in part because of the high costs associated with transporting it. Because of these expenses, countries tend to sign contracts guaranteeing supply for years. Having been locked out of some recent import deals, China could find it hard to get back on the gas bandwagon any time soon. China's planners predict the country will have to import around half of its natural gas by 2020.

China's early deals priced imported gas at about \$3 a million BTUs, or British thermal units, the standard measurement of gas. Even though prices have fallen steeply recently -- a climbdown after a price blip caused by Hurricane Katrina -- they still have roughly doubled since the Chinese started this project. The main reason is demand from countries such as the U.S., which have stepped up natural-gas imports to replace

oil.

Foreign firms can pay those prices because they can pass on cost increases to consumers. But in China, regulators have placed caps on the retail price of electricity and other fuels. Power companies, the primary customers for natural gas, can't pay market rates and make a decent profit.

China also faces challenges developing nuclear power. The price of uranium, a key ingredient, has quadrupled since 2002, partly on expectations of Chinese demand. Chinese planners are proceeding with plans to build about 30 nuclear power plants in the next 15 years. It currently operates nine reactors.

Chinese policy makers say there hasn't been a change of policy toward natural gas. Last month, the government reiterated plans to promote alternative sources of energy, including gas, nuclear power and hydropower.

But officials acknowledge that the market is thwarting Chinese companies from locking in supplies. "The fate of [natural gas] projects lie with the changes of the international [natural gas] market," says Hu Weiping, head of the oil-and-gas division of the National Development and Reform Commission, one of China's most powerful planning agencies. "The main problem is that Chinese companies haven't come to an agreement with international suppliers."

### Sensitive Issue

China started worrying about its energy policy in 1993, when it became a net oil importer for the first time. At the same time, the environmental havoc caused by the country's rapid industrialization was becoming a sensitive issue around the world and among China's citizens. The government worried that a rise in pollution-related diseases and the general condition of its

cities could become a source of popular unrest. The World Bank says China counts 16 of the world's 20 most-polluted cities.

Chinese officials said in October they expected sulfur-dioxide emissions, which are linked to acid rain, to rise 15% in 2005 from the year before. By 2025 it could surpass the U.S. as the world's largest emitter of the so-called greenhouse gases that are thought to contribute to global warming, according to John Beale, deputy assistant administrator for air and radiation at the U.S. Environmental Protection Agency.

The most embarrassing environmental mess occurred in November when a chemical spill in northeastern China's Songhua River flowed into Russia, damaging drinking supplies for millions of Chinese and Russians.

### **Promising Solution**

Natural gas seemed a promising solution. It can be used to run power plants and heavy industry, two of the country's biggest energy users, as well as home heating and cooking. Unlike oil, it is widely available in Asia, with untapped fields across the region, including Western China. Natural gas burns more efficiently and cleanly than coal, offering more energy at lower environmental cost.

Cities such as Shanghai and Beijing began digging up streets to lay pipeline networks to bring gas to every home. The central government laid plans for gas-fired power plants and a countrywide network of pipes. To receive imports in the form of liquefied natural gas, or LNG, China's state-owned oil companies announced plans to build about 20 terminals. The government predicted it would import as much as 50 million metric tons of LNG a year by 2015. Analysts think 2005 world-wide LNG consumption was between 140 and 150 million tons. A metric ton is equal to 2,204.62 pounds.

Chinese oil companies began negotiating contracts to buy gas from countries including Australia, Indonesia and Iran. In one such deal, China National Offshore Oil Corp., which is known as Cnooc, agreed to a 25-year, \$13 billion contract to buy LNG from a consortium of companies that control the North West Shelf, a large Australian gas project. Cnooc later agreed to buy billions of dollars of gas from another Australian project, the Gorgon field, which had been waiting for a buyer since its discovery in 1981.

Faced with an uncertain market, Chinese oil-and-gas companies began to rethink foreign gas deals. Cnooc walked away late last year from the Gorgon field after it couldn't agree on a price with the field's owners, led by **Chevron** Corp. of San Ramon, Calif. Chevron instead found three Japanese utilities to buy the gas, including Osaka Gas Co., which signed a 25-year contract valued at an estimated \$7.5 billion.

"When we signed the China deal, the LNG market was really a lot different," says Audie Setters, vice president of Chevron's LNG marketing and trading group in Houston. "To some extent, the market overtook them."

As China fails to secure supplies, its gas-fired power plants are facing shortages. About four gigawatts of power -- roughly 40% of China's total gas-fired power plant capacity -- has been closed this year because of a lack of gas, according to China Daily, a state-run English-language newspaper. Hong Kong utility Meiya Power Co. just scrapped plans to build a gas-fired power

plant in China because of uncertainties over supplies.

China "is just not in the market for any more gas," says Jonathan Stern, director of gas research at the United Kingdom's Oxford Institute for Energy Studies. "As soon as the price got expensive, China dropped out."

China's three major oil companies remain optimistic that the country's gas business will take off and say they intend to build more terminals. Officials at Cnooc are expecting the first LNG cargo to arrive this spring in the country's first LNG terminal in Guangdong -- a joint venture of Cnooc and the U.K.'s **BP PLC**. They say they are proceeding with several new terminals, including one in Shanghai, though they don't yet have final government approval for that project.

Some Chinese companies are looking for alternative supplies, perhaps from Russia or Kazakhstan. At the same time, the government says it may consider raising the cap on gas prices to help power companies and squelch some demand.

In Tongchuan, local officials would love to promote more gas -- but they aren't sure the economics make sense.

Tongchuan, which means Copper River, looks like it was slashed into the yellow earth of China's Loess Plateau. The city huddles at the bottom of a steep valley and is ringed by worn terraces pocked by cave dwellings some locals still inhabit. Despite the poor-looking soil, the city is relatively prosperous, with streets lined with fancy, neon-decorated restaurants and packed with cars and pedestrians.

The area is best known for a handful of agricultural products including apples, garlic and hot pepper, as well as fatal coal-mining accidents. In 2004, 166 miners were killed in a gas explosion caused by poor ventilation.

For years, coal kept Tongchuan's cement factories running and made it one of China's dirtiest cities. Thousands of smokestacks belched thick smoke that covered the town in a layer of ash. On winter days a thick pea soup enveloped the city. Residents wouldn't wear white clothes for fear they would be stained black. Also contributing to the pollution were thousands of domestic coal fires used for cooking, which made the fog worse during breakfast and dinner.

Keeping ash out of the food and controlling the high flames essential to much Chinese cooking was a problem. Zhang Yingchang, a retired bus company employee, says cooking at home required two people: one to cook and another to stoke the fire. And "what if you forgot to bring the coal from downstairs?" she says. A lot of people became ill, she recalls, including her children.

In 1997, the Asian Development Bank offered a loan of \$156 million for natural gas and other environmental projects to aid Beijing's energy diversification policy. In Tongchuan, the money helped pay for a 43-mile spider web of pipes connecting gas supplies to 30,000 households. Gas came through new pipes from a Chinese field 310 miles away.

Locals quickly embraced the gas network and air quality improved. Sulfur emissions have more than halved. More than two-thirds of the year now qualifies for what locals call "blue days," or days that are smog-free.

Ms. Zhang, who local officials produced to praise the benefits of natural gas, says she now has her own hot-water shower. Although gas is more expensive than coal, the health benefits are worth it, she says.

Still, gas demand wasn't as strong as planners had hoped. Some industrial users, such as big, state-owned cement factories, couldn't afford it. The gas-storage tanks perched on a hill above Tongchuan are only one-third full, an indication demand is running below capacity. Tongchuan Natural Gas Co., the company set up to run the city's gas operations, continues to need government subsidies to repay its ADB loan.

The city is trying to attract food-processing companies that use gas in industrial processes and is even considering setting up a network of vehicles powered by natural gas.

When weighing options for their next power plant, the city opted to stick with coal, which is cheap because it is abundant and easy to extract. The town intends to sell the electricity it generates to the regional power grid. "Natural gas is too expensive for power plants," says Mr. Zhao, the city planner.

--Kersten Zhang and Cui Rong contributed to this article.

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